

4. Through the development of computer program, environment surveillance monitoring procedure is highly-efficient. Also, the establishment of standards of testing specimen can avoid contamination.

**Conclusions:** Most departments are highly satisfied with the program because of increased work efficiency. In future, this program can be considered to contribute to inspect test results of epidemic outbreak and do 'quality assurance' of the medical practice directly related to infection control as well as consistent monitoring will be needed.

#### PS 2-330

#### EXPLORE THE BENEFIT OF IMPLEMENTATION CVBSI BUNDLES INFORMATION SYSTEM IN A HOSPITAL

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**Purpose:** The purpose of this study was to establish a CVBSI Bundles Information System which composes the idea of integrated prevent Central Line-Associated Bloodstream Infections. And constructed a convenience for electronic documentation, data storage, benefit evaluation and a platform from medical team member communication.

**Methods:** CVBSI Bundles Information System was based on the hospital information system (HIS) and constructed into 5 pages, there could print patients' care information out from the system and reduce duplication writing. All the hospital ICN was in-charge central line management. Statistical analysis of the system function could be used as basis for assessing the quality of related work.

**Results:** Compare to last year, daily assessment and maintenance of central lines adherence rate were increased from 48.5% to 90.9% and 22.9% to 86.4%, Central Line-Associated Bloodstream Infection rate was decreased from 4.8‰ to 3.0‰, cost down 621,720NT\$.

**Conclusions:** CVBSI Bundles Information System did simplify the operation and handwritten medical records, reduce the Central Line-Associated Bloodstream infections rate and cost down.

#### PS 2-331

#### THE VIRULENCE EFFECT CAUSED BY WZI GENE IN KLEBSIELLA PNEUMONIAE

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**Purpose:** *Klebsiella pneumoniae* (Kp) is a well-known pathogen and a common reason of community-acquired and nosocomial infections causing liver abscesses, endophthalmitis, or meningitis. Capsular polysaccharide (CPS) is one of the most important virulent factors in Kp. The virulence effect caused by wzi gene that is involved in the attachment of the repeat unit of CPS to outer membrane remains uncertain. Previous studies indicate that deduced Wzi protein sequence is corresponding to capsular serotype (K-type). This study aimed to examine the gene actual effect on virulence and its changes associated with K-type switch.

**Methods:** In-frame deletion and replacement was used to obtain the deletion and switched mutants of the wzi gene in Kp strain 312, which isolated from liver abscess patient and harbored K20 CPS cluster. The wzi gene of switched mutant was replaced from K20-type to K1-type. The virulence was assessed through serum killing, neutrophil phagocytosis and mouse lethality assay.

**Results:** Comparison to the parental 312 strain (K20, serum-sensitive, phagocytosis-resistant,  $LD_{50}=10^2$  cfu), 312Δ wzi mutant decreased  $10^2$ -fold of

$LD_{50}$  and exhibited more susceptible in serum killing and phagocytosis.  $LD_{50}$  of 312Δ wzi::K1-wzi mutant was  $10^3$  cfu and there was no significant difference in virulence assay between 312Δ wzi and 312Δ wzi::K1-wzi strains.

**Conclusions:** The study demonstrates that wzi gene has impact in virulence in mice model, and contributes to serum killing and phagocytosis of Kp strains. Furthermore, replacement of distinct K-type wzi gene can also influence the mice lethality.

#### PS 2-332

#### EMERGENCE OF TWO KPC NEW VARIANTS (KPC-17 AND KPC-22) IN SOUTHERN TAIWAN: A CASE REPORT

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**Purpose:** *Klebsiella pneumoniae carbapenemase* (KPC) is one of the most common carbapenemases. KPC-2-containing *K. pneumoniae* with sequence type (ST) 258 and ST 11 clones have been the most worldwide spread. We report a patient with two KPC new variants (KPC-17 and KPC-22) recovered from a patient in a nursing home.

#### Case report

An 86 year-old woman had stayed in a nursing home for 5 month. She was admitted to the hospital due to acute delirium on March 21, 2014. Brain CT showed mild cerebral atrophy. Laboratory data showed hemogram, 10.5 g/dL; WBC, 14,900/ $\mu$ L; CRP, 63.9 mg/L; and creatinine, 2.8 mg/dL. CXR showed mild bronchiectasis with probably superimposed infection. Empirical antibiotic was ceftazidime. The sputum culture yielded mixed normal flora. The blood and urine cultures showed no growth. However, CRP rose to 114.0 mg/L on March 31. Fosfomycin was added. The blood and sputum cultures showed no significant bacteria, but the urine culture yielded yeast-like organism. A CRP rose to 135.3 mg/L on April 7. Thus doripenem and fluconazole were used. Then condition was stable and she was discharged to a nursing home on April 14. On June 19, 2014, she returned with a fever of 38°C. Urine routine showed WBC, 50-99/HPF; leukocyte esterase 3+ and bacilli 3+. Co-amoxiclav was used for 7 days. The urine yielded imipenem-resistant *K. pneumoniae* (IRKP), only susceptible to amikacin, gentamicin, tigecycline and co-trimoxazole. On July 9, she had a fever of 38.1°C. Urine showed pyuria and IRKP, additionally resistant to tigecycline. Co-trimoxazole was used for 7 days and eradicated the IRKP. PCR for *bla*<sub>KPC</sub> in the plasmid of the IRKP isolates and DNA sequencing confirmed *bla*<sub>KPC-17</sub> in 1st IRKP and a new variant *bla*<sub>KPC-22</sub> (GenBank acc no. KM379100) in 2nd IRKP.

**Conclusions:** We report two nursing home-acquired *bla*<sub>KPC-17</sub>- and *bla*<sub>KPC-22</sub>-harboring IRKP isolates. Clinicians should be alert to IRKP, which may be a KPC variant.

#### PS 2-333

#### FIRST MIDDLE EAST RESPIRATORY SYNDROME CORONAVIRUS (MERS-COV) CASE IN SOUTHEAST ASIA (OUTSIDE MIDDLE EAST)

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Middle East Respiratory Syndrome (MERS) is a viral respiratory illness caused by a coronavirus called MERS-CoV. It was first reported in Saudi Arabia in 2012 and has since spread to various Middle Eastern, European, North African and Asian countries. In this case study, we report a 54-year-old man who became the first laboratory-confirmed case of MERS-CoV infection in Malaysia, as well as in Asia (outside Middle East), and also the first death in this region due to the infection. He had underlying diabetes mellitus, complaining of cough, fever and shortness of breath for 2 days with recent visit to Middle East. Chest radiograph show a consolidation at the right midzone. Blood investigations showed a normal haemoglobin and white cell count with platelet 127 000/ $\text{mm}^3$ , creatinine 132 micromol/L, urea 11 mmol/L, CK 935 mmol/L, ALT 62 mmol/L and AST 145 mmol/L. He was started on intravenous Amoxicillin-Clavulanate acid, oral Erythromycin, and oral Oseltamivir for pneumonia and throat swab was sent for MERS-

CoV PCR analysis. His condition deteriorated in ward with worsening respiratory failure. CTPA was done to rule out pulmonary embolism, which showed no pulmonary embolism but bilateral gross consolidation, more on the right, in keeping with an infective process. Antibiotics were changed to intravenous Ceftriaxone and Azithromycin; however, there was continuous deterioration and patient succumbed to his illness on day 4 of admission. His throat swab was later traced back to be positive for MERS-CoV, while his sputum was negative for bacterial cultures.

#### PS 2-334

#### INFLUENZA A (H1N1) PNEUMONIA WITH ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS) AND RHABDOMYOLYSIS WITH ACUTE RENAL FAILURE: A CASE REPORT

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**Purpose:** It is generally noted that patients with pneumonia from pandemic H1N1 may have abnormal laboratory examination results, including elevated creatine kinase (CK) levels in the previous literatures. We herein report a similar case complicated with ARDS and rhabdomyolysis.

#### Case report

This 36-year-old woman was admitted to our emergent room with fever for 2 days. She was transferred to the ICU due to influenza A pneumonia with ARDS and profound hypoxemia. Immediate endotracheal intubation was done and Nitrogen oxide (NO) was used for profound hypoxemia. Prone position ventilation was not attempted due to morbid obesity. Antibiotic therapy with Tazozin, Cravite and Tamiflu was used. Dopamine was prescribed due to refractory shock post resuscitation. However, no significant bacterial culture result was obtained, except a positive PCR for Influenza A (H1N1). The PaO<sub>2</sub>/FiO<sub>2</sub> ratio remained < 200 mmHg, requiring the use of high PEEP, fully sedation and muscle relaxant to maintain the oxygenation. However, fever and shock persisted, hence, Cravite was shifted to Tyagacil. The subsequent follow-up blood culture was negative. Poor oxygenation hindered her from the study of Computed Tomography. Oliguria with tea-colored urine was noted. Marked elevation of CK total [7601 IU/L] and myoglobin [32890 mg/dL] were noted. Rhabdomyolysis with acute renal failure was impressed, which was probably related to H1N1 infection. After the treatment, the condition was still worsening. Due to unstable blood pressure and severe metabolic acidosis with oliguria, continuous veno-veno hemofiltration (CVVH) was commenced. Then the patient finally expired due to progressive condition.

**Conclusions:** Although pneumonia and ARDS are the most common severe complications of H1N1 infection. Rhabdomyolysis should be considered in the evaluation of muscle symptoms associated with Influenza A (H1N1) Pneumonia, especially in critically ill patients. Timely extra-corporeal membrane oxygenation may be helpful to survive the patients with life-threatening Influenza infection.

#### PS 2-335

#### URINARY TRACT INFECTION CAUSED BY MYROIDES SPECIES: A CASE REPORT

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**Purpose:** *Myroides* species are widely distributed in nature, but clinical human infections by these organisms are extremely rare. We report herein prolonged outbreak of urinary tract infection by *Myroides* species.

#### Case report

A 63-year-old male of *end stage renal disease*, rheumatoid arthritis, destroyed lung post operation, post tracheostomy suffered from consciousness change and much sputum for five days. He was brought to emergency department on November 17, 2014. Laboratory data shows leukocytosis (WBC: 13,300/ $\mu$ L); bandemia (band: 5%); and C-reactive protein, 113 mg/L. CXR showed almost whiteout of the right side destroyed lung with residual alveolar, surgical clips and suture stitches left. Ceftazidime was given. Brain CT showed mild communicating hydrocephalus and mixed acute and old lacunar infarcts. He was admitted to intensive care unit (ICU). Emergent ventilator support was used due to dyspnea and respiratory failure. Fever

happened. Sputum culture showed *Pseudomonas aeruginosa* and carbapenem-resistant *Acinetobacter baumannii*. Urine culture showed *Myroides* species, susceptible to imipenem and piperacillin/tazobactam, but resistant to ceftazidime and ciprofloxacin. Antibiotic was shifted to ceftazidime and colistin. The patient condition improved gradually under medical treatment and started weaning trial, but ABG showed CO<sub>2</sub> retention. Owing to ventilation dependence and improved condition, he was transferred to the RCW for long-term care on November 27, 2014.

#### Conclusion

Serious and prolonged nosocomial outbreaks of urinary tract infections caused by *M. odoratimimus* have been reported. Because multi-resistance was generally found in *Myroides* spp., empirical therapy was usually ineffective. We report a nosocomial urinary tract infection by *Myroides* spp.

#### PS 2-336

#### BETADINE<sup>®</sup> SOLUTION, BETADINE<sup>®</sup> SKIN CLEANSER, BETADINE<sup>®</sup> SURGICAL SCRUB, AND BETASEPTIC<sup>®</sup> DEMONSTRATED EXCELLENT VIRUCIDAL IN-VITRO EFFICACY AGAINST EBOLA VIRUS ZAIRE AND MODIFIED VACCINIA VIRUS ANKARA

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**Purpose:** The current Ebola virus (EBOV) epidemic highlights the need for efficacious virucidal products. In Europe, EN 14476:2013/A1:2014 describes the standard for determining virucidal activity. For the claim 'virucidal active against enveloped viruses for hygienic handrub and handwash' the Modified vaccinia virus Ankara (MVA) was introduced as reference virus in 2014. In the case of deadly EBOV, which is also an enveloped virus, the activity needs to be proven.

The first aim of this study was to test the in-vitro efficacy of four povidone iodine (PVI) formulations containing 4% (BETADINE<sup>®</sup> Skin Cleanser), 7.5% (BETADINE<sup>®</sup> Surgical Scrub), 10% (BETADINE<sup>®</sup> Solution) PVI and 3.2% PVI and 78% alcohol (BETASEPTIC<sup>®</sup>). The second aim was to verify the claimed concentration-contact-time values with EBOV.

**Methods:** In accordance with EN 14476 a standard suspension test was used for testing against MVA and large-volume plating technology for testing against EBOV to increase test sensitivity and to exclude potential after-effects. All products were tested under clean (0.3 g/l BSA) and dirty conditions (3.0 g/l BSA + 3.0 ml/l erythrocytes) as interfering substance with an application time of 15, 30, and 60 seconds for MVA and 15 seconds for EBOV. The products were tested undiluted, 1:10 and 1:100 diluted against MVA and 1:10 diluted against EBOV.

**Results:** Viral titres of MVA and EBOV were reduced by >99.99% to >99.999% under clean and dirty conditions with 15 seconds application.

**Conclusions:** All products showed excellent virucidal efficacy against EBOV demonstrating the important role PVI can play in the prevention and limiting the spread of the Ebola disease. The proven efficacy against both test viruses with 15 seconds application time is helpful information for implementation of appropriate guidance to people exposed to EBOV and confirms excellent virucidal efficacy of PVI against enveloped viruses.

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#### PS 2-337

#### CYTOMEGALOVIRUS VIREMIA IN PATIENTS WHO WERE INFECTED WITH HUMAN IMMUNODEFICIENCY VIRUS

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**Introduction:** At the end of 2014, there were more than 28,000 reported HIV-infected patients in Taiwan. Cytomegalovirus (CMV) infection, secondary to *Pneumocystis jiroveci* pneumonia and candidiasis, is the 3<sup>rd</sup> common opportunistic infections in HIV-infected persons. This study aimed to explore the relationships between CMV DNA quantitation and the severity of immune compromised states among HIV patients.

**Methods:** Real time polymerase chain reaction (RT-PCR) was applied to detect CMV DNA using COBAS AmpliPrep/COBAS TaqMan CMV assay (Roche